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ABSTRACT

A management, or "quality revolution" among United States companies in the 1980s has brought rapid change, and has been promoted more by businesses than by business schools which are responding more gradually to the quality revolution. The developments in Japan in the 1950s triggered similar developments in many other countries, including the United States. Companies have adopted management practices that depart sharply from traditional management. The quality revolution has used statistical tools to improve quality and has demanded long-term commitment for real change. Many in business schools regard the quality revolution as a passing fad based on anecdotal evidence from descriptive case histories which may be self-serving. However, business school faculty could play a vital role in systematic academic research on the quality revolution. The University of Chicago's Graduate School of Business has allowed the quality revolution to affect its program gradually through the "market forces" of electives allowing faculty to offer and students to enroll in courses that reflect their interests (including the quality revolution). Faculty interest, special talks and seminars, encouragement of faculty research, student initiatives, and other efforts concerned with the quality revolution have all affected the business school. (Contains 19 references.) (JB)

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Selected Paper
Number 71

The Quality Revolution and the Business School Response

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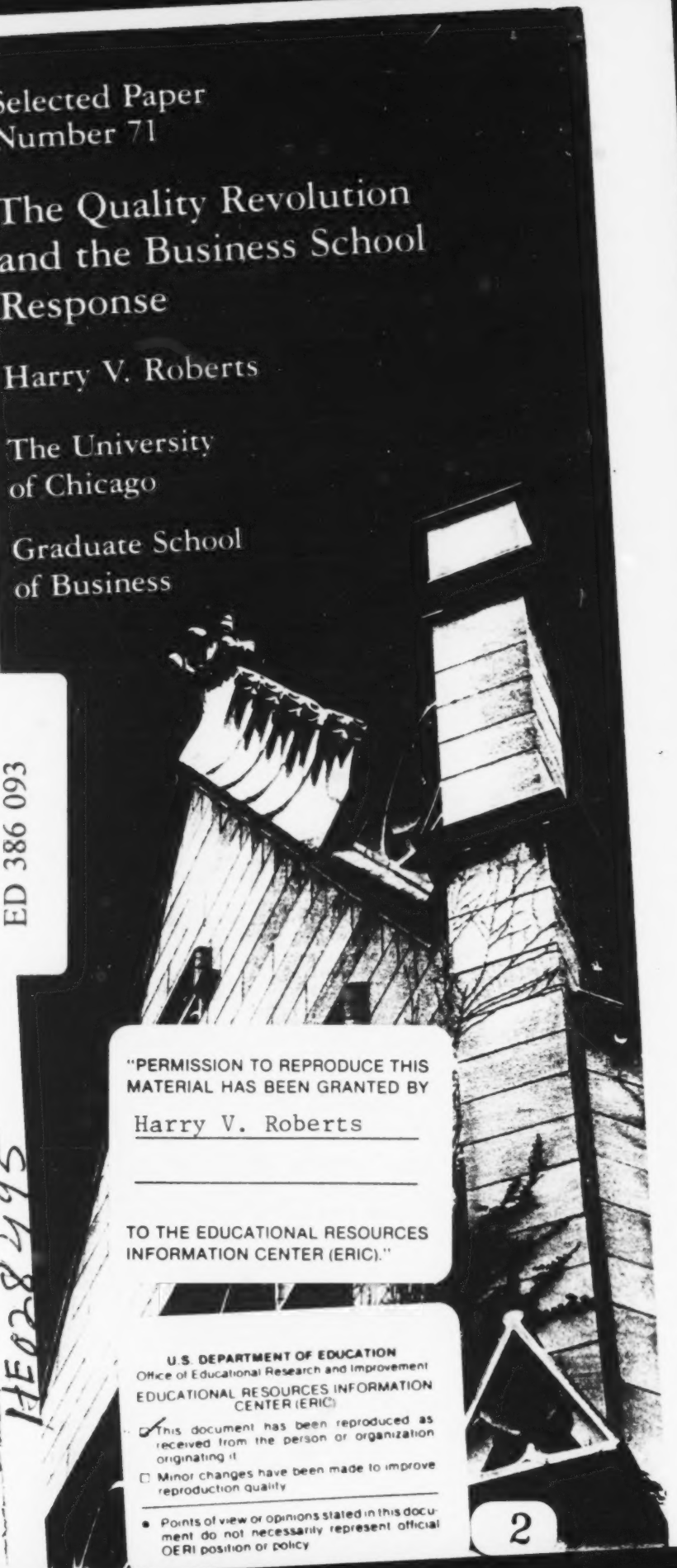
of Chicago

Graduate School
of Business



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Harry V. Roberts, a leader in the quality and productivity movement, recently was named the Sigmund E. Edelstone Professor of Statistics. He began his career at the Graduate School of Business in 1949 when he was appointed instructor in statistics. Professor Roberts received his A.B., M.B.A. and Ph.D. from the University of Chicago.

Professor Roberts's research interests include the theory and application of Bayesian inference, interactive computing, time-series analysis, the relation between statistical theory and practical decision making, survey methodology and practice, as well as quality control and productivity. His articles include "Probabilistic Prediction," *Journal of the American Statistical Association* (1965); with Lyn D. Pankoff, "Bayesian Synthesis of Clinical and Statistical Prediction," *Psychological Bulletin* (1968); with Nicholas Gonedes, "Differencing of Random Walks and Near Random Walks," *Journal of Econometrics* (1977); and with Delores A. Conway, "Reverse Regression, Fairness, and Employment Discrimination," *Journal of Business and Economic Statistics* (1983). His books include, with James H. Lorie, *Basic Methods of Marketing Research* (1951); with W. Allen Wallis, *Statistics: A New Approach* (1956); *The Nature of Statistics* (1962); and *Conversational Statistics* (1974).

Professor Roberts has served as associate editor of the *Journal of the American Statistical Association*, the *American Statistician*, and the *Journal of Marketing*. A fellow of the American Statistical Association (ASA), he has been a member of numerous committees of the ASA, including its advisory committee to the United States Bureau of the Census. In 1989, the Chicago chapter of the ASA selected him the nation's Outstanding Statistician of the Year. His consulting work includes his current stint on the United States Defense Manufacturing Board. He is a member of Beta Gamma Sigma and Phi Beta Kappa.

The Quality Revolution and the Business School Response

I. Overview

In the 1980s, many American companies made rapid improvements in quality, productivity, and competitiveness, many of which were foreseen in the early 1950s by Peter F. Drucker in *The Practice of Management*. In aggregate, these improvements constitute a management revolution, one that I will call the "quality revolution." Traditional philosophy and practices in almost all areas, not just production management, were reexamined and radically altered.

Most component developments of the quality revolution have historical precursors, such as Frederick Taylor's scientific management movement of the early part of this century. The quality revolution began in Japan in the 1950s with modest though important help from two Americans, W. Edwards Deming and Joseph M. Juran; it continues today in Japan at an ever-intensifying pace. I call it a quality revolution because the original contributions of Deming and Juran emphasized the statistical quality control movement, which had been pioneered by an American, Walter A. Shewhart, in the 1920s and 1930s and applied widely in American industry during World War II. Also, improvement of quality has played a central role in all subsequent developments. But I could just as easily have used the term "management revolution."

Although quality has always been a central theme, the quality revolution extends to matters outside the usual domain of quality. It constitutes a broad revolution in management that has challenged orthodox theory and practice. The revolution is far from complete, even in Japan and even in the most farseeing companies. In my judgment, many companies are in

peril because they are unaware of the revolution or have written it off as a passing fad.

By and large, businesses rather than business schools have pioneered the revolution. Quite properly, business schools have focused on underlying theoretical principles, which change much less rapidly than business practice. Nonetheless, the revolution in quality and management that is now occurring needs to be much more fully reflected in the curricula of business schools than at present. Business students (as well as those in other fields, such as engineering) need to know about it, regardless of their specific career objectives.

Courses need to be offered that are still not widely taught at many business schools, for example, courses on the various statistical tools for improvement of quality and new approaches to operations management such as just-in-time production. More important, however, I believe that existing courses—for example, management accounting courses—need modification to introduce the new ideas. Some entirely new courses that go beyond tools of statistics and management science may also be in order.

In the balance of this paper, I shall consider three topics: a more detailed view of the quality revolution itself (section II); the problems posed for business schools by the quality revolution (section III); and how the Graduate School of Business at the University of Chicago in particular has been responding (section IV).

II. Background on the Quality Revolution

The developments in Japan in the 1950s triggered similar revolutions in many other countries, including the United States, with substantial lags, but Japan is still the leader. In spite of all the improvement in the 1980s, Joseph Juran claims

that American business is further behind Japan now than in 1980.

In the course of the revolution, a number of companies in Japan and elsewhere have adopted management practices that depart sharply from what has long been regarded as the state of the management art. Here are a few examples:

– Mass production in the tradition of Henry Ford and the American "arsenal of democracy" is in many companies giving way to a strategy of quick changeovers, flexible production, and minimal inventories.

– Improved quality is usually seen as entailing lower rather than higher costs.

– The scope of production and clerical jobs is being enlarged to include a wider range of activities and skills as well as positive contributions to improvement of company processes.

– The use of competitive bidding by suppliers has been curtailed and long-term, cooperative relationships with single suppliers have been developed.

– The role of staff has shifted in the direction of facilitation and support rather than micromanagement of line workers.

– There is greater emphasis on team effort as opposed to individual virtuosity.

– Even traditional accounting principles and practices have come under scrutiny.

Some American companies have been touched by the revolution and are doing well in international competition. This is encouraging. However, many—perhaps most—American companies and managers have been relatively untouched. I see some analogy with the personal fitness boom in the United States, which has produced a small percentage of very fit people but has had little effect on the rest, most of whom remain couch potatoes.

The Role of Statistics in the Quality Revolution

One conspicuous feature of the quality revolution has been the use of statistical tools to improve quality. But the quality revolution carries far beyond the recognition that statistics can be helpful for improved business performance. There is more to quality than wider use of procedures subsumed under traditional statistical quality control. The most useful statistical tools are simple ones, such as histograms, scatter plots, and control charts. There is increasing, but still modest, use of more sophisticated tools centering on the statistical design of experiments and modern econometric methods and tools of time-series analysis.

The best-known statistician in the revolution, W. Edwards Deming, has focused more attention on management strategy and leadership than on statistical tools. Deming's famous fourteen points make few direct references to statistics. Rather, they constitute a blueprint for overall management and organizational philosophy and strategy, a blueprint that is remarkably harmonious with writings about the quality revolution by nonstatisticians, including most on the list of references at the end of this paper.

General statistical thinking has contributed more to Deming's philosophy than has technical statistical methodology. For example, he distinguishes between common causes of variation (which can in principle be captured by a statistical model) and special causes of variation (outliers from the model). He explains that it is essential for sound decision making that managers sort out common and special causes and then act appropriately: fix the special causes directly; work on the system to deal with the common causes.

Deming suggests that statistics alone is ineffective in the business world unless the organizational culture permits statistical work to flourish. In particular, the focus must be on keeping the company in business for the long pull rather than on assessing blame for current crises; in so doing, there must be substantial reliance on the collection and analysis of data. Broadly speaking, Deming's fourteen points and related writings can be interpreted as a charter for the quality revolution. The actual revolution has gone far to implement his charter.

Grayson and O'Dell's Ten Changes

To convey the scope of the quality revolution, I shall draw upon an excellent recent book by C. Jackson Grayson, Jr., and Carla O'Dell, *American Business, a Two-Minute Warning: Ten Changes Managers Must Make to Survive into the 21st Century.* The "ten changes," as communicated by the chapter titles include many developments of the quality revolution:

1. Integrated operating systems (Include faster start-ups and minimal inventories.)
2. Redesigning the organization (For example, have few layers of management and wide spans of control.)
3. The quest for quality (Quality efforts must be integrated into the company's total business strategy.)
4. Competitive compensation (Pay should be flexible, varying with productivity and profitability.)
5. Employment stability and flexibility (Use the strategy of stable employment as a vehicle for creating greater job flexibility, greater employee commitment, and a more skilled work force.)

6. Expanding employee involvement (For example, link existing small-group problem-solving with business objectives.)
7. Training and continuous learning (Specifically, management must believe in learning, provide time for it, reward it, and engage in it itself.)
8. Accounting systems (For example, change the idea that a desk is an asset while the person sitting behind it is an expense.)
9. Symbols, status, and membership (For example, get rid of executive dining rooms and reserved parking spaces.)
10. A labor-management partnership (Work together as team members rather than adversaries.)

The authors emphasize that this list should be taken as a unified whole. Focusing on only one or two of the headings is unlikely to lead to a good overall strategy. No company can do everything at once, but companies will do well to keep the entire list in mind when implementing particulars.

If, as Grayson and O'Dell say, developments like these are necessary for survival into the twenty-first century, it follows that business school curricula should reflect them. Not only should changes and additions be made in specific courses, but a point of view should pervade all courses. One way to express that point of view is to say that any company product or process can be improved, usually substantially, and continuous improvement is the overall aim.

The Central Role of Quality

I regard the quest for quality, as Grayson and O'Dell put it, as central. For example, better

quality may make it easier to introduce improved operating systems (heading 1 above), such as just-in-time production. Moreover, leading companies such as Motorola report that improved quality drives other traditional measures of performance, such as inventory turnover and production cycle time, and indirectly drives financial measures such as return on investment and stock market performance.

There seems to be no standard pattern by which companies can improve quality, but companies that have succeeded in quality improvement are agreed that the process is not an easy one. Slogans and short-term "quality programs" do not suffice. Management can't simply "install total quality management" and then turn to other problems. The quality effort must be never-ending.

A Word of Caution

Most writers on the quality revolution are highly enthusiastic, even evangelistic, in their advocacy of new methods of management. These supporters —including, for example, the books cited at the end of this paper—are often critical of past American management, offering bold prescriptions for its reform.

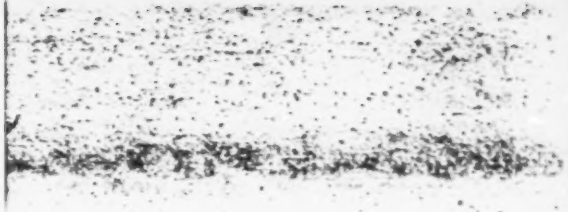
I find most of these prescriptions appealing and have become something of an evangelist myself. But many people in business and some faculty members in business schools are skeptical. They wonder whether we are seeing a passing fad rather than a continuing and enduring revolution. They wonder also about the claims of success, which often rest on anecdotal evidence from descriptive case histories and which may be self-serving.

The closest approach to broad and systematic research is based on analyses by the Strategic Plan-

ning Institute of the so-called PIMS (Profit Impact of Market Strategy) database. These analyses seem to show that improved customer satisfaction does tend to bring higher profitability, but these conclusions have to be somewhat qualified by problems of disentangling cause and effect. For example, do companies obtain better financial results because they work on quality improvement, or are they able to work on quality improvement because they are doing well financially?

Case histories indicate that a growing number of companies appear to be succeeding in the quality revolution. In principle, one must regard evidence from case histories with great reservation. But many case histories of company successes are so dramatic as to be convincing by the principles of statistical intervention analysis. That is, the changes achieved are so substantial compared with past performance that there is no doubt about their statistical significance and little danger in imputing causality. (See, for example, the eighty-four names on the "Honor Roll" in an appendix to *World Class Manufacturing* by Schonberger, cited in section VI. All these organizations made substantial, well-documented improvements by application of new management methodology.)

The single case history of Toyota is extremely informative because it presents clear evidence that very different methods of management have led to superior results. A second case history, that of NUMMI (New United Motors Manufacturing, Inc., the joint venture of Toyota and General Motors in Fremont, California), suggests that similar results can be achieved with an American work force, a unionized workforce that had previously been a problem. The performance of winners of the Malcolm Baldrige National Quality Award—including Motorola, Milliken, and Xerox—also provide persuasive cases.



There is, of course, much room for systematic academic research on methods that seem to work and those that do not, and business school faculty could play a useful role in such research.

III. The Quality Revolution and Business Schools

So far as I can tell, very little of the management revolution has so far been reflected in business school curricula. Here and there, new courses are created on aspects of the revolution, such as quality control and improvement or Japanese management techniques. I meet a growing number of interested, enthusiastic business school faculty members. But the big picture has so far changed little: current business school curricula give little indication of the degree to which the business world is changing. The business press and even the general media, on the other hand, reflect widely the developments I have described. It is very easy to collect current materials for one's students in a course focused on quality.

Unless I have misjudged the evidence, rapid and fundamental changes are needed in business school curricula and research.

The teaching implications are obvious. If better management methods are available, they are not secret and they can be taught. Indeed, outside formal business school degree programs, there is an avalanche of short courses and seminars, many of very high quality, that deal with various aspects of the revolution.

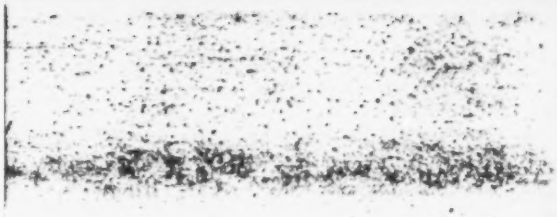
The Xerox Quality Forum

The Xerox Corporation invited deans of a number of business schools to attend or to send representatives to a "quality forum" at Leesburg, Virginia, from July 31 to August 3, 1989. The attendees included a num-

ber of deans, but the faculty attendees came mainly from management science, operations management, quantitative methods, production, and statistics.

Most attendees were already quality enthusiasts and felt, as do I, that pervasive curricular changes are needed. They saw, however, a number of deterrents to making such changes at their own schools. Themes such as the following came up often in small group discussions: (1) Knowledge base, cases, theory, and resource materials are needed (i.e., a certifiable body of knowledge). (2) Academicians need real-world exposure to build an experience base to teach quality. (3) The reward system does not support academic investment of time and career in the topic. (4) Within business schools, institutional resistance to change is very high. (5) Company recruiters coming to business schools seem unaware of, or uninterested in quality, even when their own top management is pushing quality hard. (6) Discipline-specific business school structure impedes incorporation of quality content into the curriculum. Also, other "newcomers" such as ethics and globalization are claiming attention in the curriculum. (7) Specialized, technical subjects have more appeal to academicians than integrative subjects. (8) Quality has been applied mainly to manufacturing. There is skepticism that the ideas work outside of manufacturing. (9) Finance, marketing, and accounting provide the primary orientation of business schools. Production, operations, and management are second-class citizens, and quality comes under that heading. (10) Academicians are often unaware of the competitiveness crisis, which is causing pain to many companies but not to universities.

No business school faculty member interested in a better curriculum can ignore these negative factors. But a business school interested in long-term survival cannot ignore the revolution. If the new



management ideas are as useful as I believe, they will be taught somewhere. Note that Japan has only a handful of business schools and relatively little work in the quality sciences at its universities, but the new management ideas are being taught in Japan within companies and by organizations such as the Japanese Union of Scientists and Engineers (JUSE).

The quality revolution has tended to be confined to companies and other organizations faced by severe competitive challenges, often from Japan. Business schools so far have not faced such challenges and are not in a state of alert.

Can Business Schools Respond?

Although courses relating to quality are now appearing in business schools, no fundamental restructuring of business school curricula seems to be happening. On the surface, the obstacles to substantial change within business schools appear nearly insurmountable. But apparently insurmountable obstacles were present in companies that have responded effectively to the Japanese challenge, such as Xerox and Motorola. Moreover, the quality revolution itself provides tools and approaches to change that can be adopted by business schools, if they are challenged to do so.

Of course, schools of business are service organizations; they do not conduct manufacturing operations. However, as an illustration of what is possible in service organizations, note that in such companies as Motorola and Xerox the quality emphasis has been companywide; it has not been confined to manufacturing. Moreover, there are reports of progress from organizations wholly devoted to services, such as governmental units in the city of Madison and the state of Wisconsin, where fiscal austerity has forced effective response to the legislative order to "do more with less."

During one discussion at the Xerox Quality Forum, business school faculty were pointing out how crowded

the curriculum already is, that infusion of new material would have to displace important things now being taught. Robert Galvin, chairman of the executive committee at Motorola, asked, "Why can't you teach 50 percent more in a year?" Galvin said that big improvements have been attained at Motorola by adopting a "clean-sheet-of-paper" approach, in which no existing constraints are taken as binding if they stand in the way of quality improvement. Top management sets, and follows up, aggressive quality goals in order to create the right environment for removing constraints. Less aggressive goals aimed at minor improvement do not lead to major improvements. (Of course, continuing minor improvements, which the Japanese call *kaizen*, are also important in quality improvement.)

Closer cooperation in research and teaching between business schools and world-class companies would be highly desirable. Motorola, Xerox, and other business leaders have pointed out useful directions of development. Business school faculty, if given the right incentives, could contribute significantly both to companies and to their own schools.

IV. Evolutionary Change: A Case History

The Graduate School of Business of the University of Chicago provides an instructive case history on the introduction of ideas of the quality revolution into an academic program. I examine some of the developments that began with the School's first steps in the early 1980s.

Elective Courses and Beyond

In an internal report written in 1988, John E. Jeuck, Robert Law Professor Emeritus of Business Administration, observed that, while there had been no

full-scale curricular review at Chicago since 1969-70, the curriculum has nonetheless evolved with changes in faculty and student experiences, interests, and outlook. Further, elective courses can be added or dropped with a minimum of bureaucratic procedure, so that the number and variety of course offerings have evolved easily and continually.

Jeuck's statement suggests that it is possible to overcome some of the obstacles to curricular change that were pointed out by business school faculty who attended the Xerox Quality Conference and enumerated in section 3 above. Obstacles to changing basic structure are as substantial in business schools as in other organizations. But organizations can be designed—or modified—in ways that permit evolutionary change to occur readily. I see three important ways in which this can be done in business schools:

– Substantial opportunity for students to fit elective courses into their M.B.A. programs

– Substantial freedom of individual faculty members to determine the content and emphasis of elective courses that they offer

– Capability to offer new electives with a minimum of delay

In all three respects, conditions have long been favorable at Chicago. (Our flexibility is kept short of chaos by the *Curriculum Guide*, an innovation dating from 1970, which provides up-to-date descriptions of what each instructor will do in his or her section of every course offered.) Thus, market forces may be used within a school to effect curricular change. Student response to new electives determines the degree to which the new ideas can enter the curriculum.

To see how introduction of quality ideas has already occurred at Chicago by the elective route, consider the following examples.

Willard I. Zangwill, professor of management science, has long been interested in practical management as well as technical management science. He has also spent substantial time in Japan, studying Japanese management methods. For several years he has offered a popular elective course, Applied Production and Operations Management (Business 368), in which Japanese management techniques are analyzed in depth. Zangwill characterizes his aim as abstracting out the techniques of the most successful companies, finding the things that consistently work and consistently yield improvements.

During the same time, and independently of Zangwill, I have offered a statistics elective, Quality and Productivity Improvement (Business 323), a course that has been well received by students and has grown substantially in enrollment over the past several years. Although the course focuses mainly on statistical techniques useful in quality improvement, it introduces many management concepts that must be understood if statistics is to be used effectively in organizations.

Interestingly, students report that these two courses complement rather than duplicate each other. Informal faculty cooperation and internal market forces (student choice of electives) tend to assure coverage while preventing unnecessary duplication.

More recently, Chicago has offered elective courses by two visiting "practitioner-scholars" who are also alumni, William A. Golomski and F. Timothy Fuller. Golomski's course deals with quality policy for high-level management, including the process of preparation for competition for the Malcolm Baldrige National Quality Award. Fuller's course deals with systematic application of the Deming/Shewhart "Plan-Do-Check-Act" (PDCA) cycle to bring about quality improvement at all levels. In

1990, Zangwill and I are offering a seminar course in Quality, Innovation, and Competitiveness. None of these electives substantially duplicates Business 368 or Business 323.

New ideas can also be infused into required basic courses. As an example I cite Production and Operations Management (Business 365). (It is not quite a required course, since it is one of four courses of which students must take three, but it illustrates my point.) In recent years, quality ideas have become a substantial component of Business 365 simply because members of the production faculty have deemed these ideas sufficiently important to deserve inclusion.

The same infusion has occurred elsewhere, especially in some sections of the introductory statistics course.

Faculty Initiatives

Interest by younger faculty. New ideas inevitably enter the curriculum as faculty members become interested, so it is important that younger faculty members become interested in quality and productivity improvement. In the statistics area at Chicago, two younger members of the statistics group—George Easton and Robert McCulloch— have become intensely interested in quality and are giving the subject some attention in both their teaching and research. Easton has even found time to become the youngest examiner in the evaluation process for entrants in the competition for the Malcolm Baldrige National Quality Award. Ananth. Iyer and Abbie Griffin are counterparts of Easton and McCulloch in management science/production.

The same has arisen elsewhere in the business school world, including many schools that attend the annual conferences entitled "Making Statis-

tics More Effective in Schools of Business," which were inaugurated at Chicago in 1986 and have since been held around the country.

Special talks and seminars. Faculty initiatives have included a series of talks by George Easton on his visit to Japan in autumn 1988; a new faculty workshop in Quality, Productivity, and Competitiveness, inaugurated in autumn 1989; and sessions by Willard Zangwill, George C. Tiao, M. Laurentius Marais, and me in a continuing education series in 1988 and 1989. The School's 1989 and 1990 Management Conferences featured panels on quality and Japanese management techniques.

Encouragement of faculty research. Research productivity by faculty members at universities is a key element in career advancement. One way to infuse quality ideas into business schools is to show that good opportunities for research are to be found in the area of quality and productivity improvement. In a talk recently given at the University of Iowa, I tried to set forth what some of those opportunities might be. For illustration, I shall here mention just one opportunity for faculty members in the field of finance.

Many writers on the quality revolution claim that the stock market pays too much attention to short-term financial results and too little attention to management actions that primarily affect the long-term outlook. Hence management actions that would be desirable for long-term competitiveness are discouraged, while exaggeration of short-term financial performance is encouraged. Is this true? Is there any way to do research to tell whether or not it is true? A special case concerns the possibility that efforts to improve quality, productivity, and competitiveness in the long term may make a company more vulnerable to takeovers in the short term. Is there evidence that this is true?

Committee on Quality, Productivity, and Competitiveness

One bureaucratic step has been taken, although it is a low-key one. Members of the School's faculty in Production/Management Science and Statistics have joined to set up a cross-disciplinary committee, much on the pattern of committees in the overall organization of the university. It is hoped to enlarge participation in this committee to interested faculty members from other areas in the School.

Student Initiatives

Special events. Special events can do much to create interest in new ideas, and these need not depend entirely on faculty initiatives. For example, Malcolm Roberts and Jonas Aleksonis, both M.B.A. '90, led a student production group that sparked a series of lectures and field trips. In the last year, there have been visits to three plants representing the best of the quality revolution (Matsushita, Navistar, and Diamond-Star); lectures by Bill Smith (Motorola), Scott Moon (RES Manufacturing), and Perry Gluckman, a leading quality consultant; and a videotape of a presentation by Christopher Galvin of Motorola on total quality management. (Galvin is also a guest lecturer in the Zangwill-Roberts seminar course mentioned above.)

The LEAD Program. One major structural innovation at Chicago has been the LEAD Program (short for Leadership Education and Development), developed by students and inaugurated in autumn 1989 under the guidance of Deputy Dean Harry Davis. The program is an unconventional special course for first-year students, which emphasizes many nonclassroom approaches that deal with aspects of business

leadership that are hard to introduce into traditional courses, including communication, negotiation, and ethics.

LEAD harmonizes very well with the ideas of the quality revolution. First, it embodies the notion that introduction of new products is essential to survival and that such introduction must be bold. Some will fail, but it is better to experiment and have some failures than to be overly cautious and be outpaced by more aggressive experimenters.

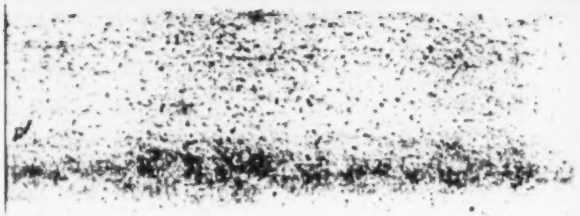
Second, the program has already adopted two characteristic approaches of the quality revolution: (1) the Suggestion Forum, in which a mechanism is set up to elicit and to act upon student suggestions and (2) a student Continuous Improvement Committee, with subcommittees concerned with curriculum, placement, alumni relations, and policies.

Relations with the Business Community

Our activities in the quality area have been substantially enhanced by several companies. Motorola has responded to every request for assistance and has allowed our students to take special courses, such as Design for Manufacturability offered in the Motorola Training and Education Center. Faculty members Easton, McCulloch, and I benefited from attending the Xerox Quality Forum in August 1989. CEO Jack Reichert of Brunswick arranged to have Walter Breisch, a senior Brunswick quality manager, work closely with a group of Chicago faculty in learning how Brunswick was using modern quality methods.

V. Conclusion

I have described exciting developments in the business world that, in many companies, are revolutionizing traditional management practices and leading



to remarkable improvements in quality and productivity. It is no longer necessary to accept poor quality and slipshod performance as a way of life. Never-ending improvement is the new goal.

Companies vary enormously in their response to the challenge posed by these developments. Those who espouse "business-as-has-always-been-usual" are likely to lose ground competitively. Those who respond positively will encounter obstacles and discouragements, but the potential rewards are great.

Business schools face the same challenge. They need to offer the new ideas and methods to their students in all areas. Whether the student goes into operations or investment banking, these ideas and methods can make a big difference in career advancement and satisfaction.

Company recruiters need to be aware of the quality revolution and to charge business schools with helping to meet the competitive challenges faced by the companies they represent. Business school alumni need to require their schools to keep up. Chicago alumni can be pleased with the progress that I have reported at Chicago, but they should never let us forget that what we have done so far represents only the first stages of a commitment to never-ending improvement.

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